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PATENT COOPERATION TREATY
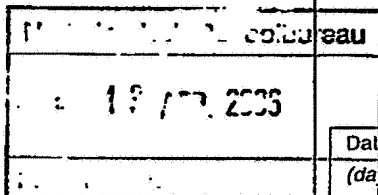
From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing (day/month/year)	11.04.2006

Applicant's or agent's file reference	IMPORTANT NOTIFICATION
P212563PCT	

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/NL 03/00933	24.12.2003	24.12.2003

Applicant
TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

   The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

   Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

   For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

   The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Muehlbauer, P Tel. +49 89 2399-2513

Form PCT/IPEA/416 (January 2004)

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P212563PCT	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/NL 03/00933	International filing date *(day/month/year)* 24.12.2003	Priority date *(day/month/year)* 24.12.2003

International Patent Classification (IPC) or both national classification and IPC INV. G06F13/40

Applicant TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) et al.

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

   I   ☒   Basis of the opinion

   II   ☐   Priority

   III ☐   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   IV ☐   Lack of unity of invention

   V   ☒   Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   VI ☐   Certain documents cited

   VII ☐   Certain defects in the international application

   VIII ☐   Certain observations on the international application

Date of submission of the demand 21.07.2005	Date of completion of this report 11.04.2006
Name and mailing address of the International preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Rudolph, S Telephone No. +49 89 2399-7526

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.   PCT/NL 03/00933

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

   Description, Pages

   1-33   as originally filed

   Claims, Numbers

   1-22   received on 20.03.2006 with letter of 17.03.2006

   Drawings, Sheets

   1/16-16/16   as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐   the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐   the language of publication of the international application (under Rule 48.3(b)).

   ☐   the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐   contained in the international application in written form.

   ☐   filed together with the international application in computer readable form.

   ☐   furnished subsequently to this Authority in written form.

   ☐   furnished subsequently to this Authority in computer readable form.

   ☐   The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐   The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐   the description,   pages:

   ☐   the claims,   Nos.:

   ☐   the drawings,   sheets:

5. ☐   This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-22
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-22
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-22
	No:	Claims	

2. Citations and explanations

   see separate sheet

Re Item V
Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:
D1: US-B1-6 598 106 (OTTO ERICH S ET AL) 22 July 2003 (2003-07-22)

The present application meets the requirements of Articles 33(2) and 33(3) PCT.

1. Claim 1:

   Closest Prior Art: Document D1 (US6598106) discloses a communication system comprising a monitor (figure 4/modules 414, 424), memory, a bus and one or more resources (figure 4/modules 432-436), said memory being connected to the monitor via said bus (column 3/lines 44-46) and arranged for storing tasks and data (applies to each memory), each of said resources being connected to the monitor via said bus (figure 4) and arranged for at least one of performing a function and executing a program (implicit), wherein said bus is implemented by a plurality of adjacent sections (figure 4/buses 410, 430, 420).

   Characterizing Features: The subject-matter of claim 1 therefore differs from this known D1 in that each section being implemented as an ASIC connected to a resource and said ASICs being arranged to assign sub busses of said bus with variable width. Thus, claim 1 is novel within the meaning of Article 33(2) PCT.

   Technical Problem: The problem to be solved by claim 1 may therefore be regarded as how to provide intercommunication flexibility between a multitude of resources connected to the bus.

   Inventive Step: The term "assign sub busses of said bus with variable width" is to be understood within the meaning of figures 11 and 14-16, i.e. the ASICs provide an interconnection of a particular fraction of available bus lines between the A-side (of the ASIC), the B-side and the respective resource connected to the ASIC.
   Assigning sub busses with a variable width is neither disclosed nor redered obvious by any of the prior art documents. Thus, claim 1 meets the requirements of Article 33(3)

PCT with regard to inventive step.

2.   Claim 20 and 21:

Independent claims 20 and 21 disclose a method and a computer program product corresponding to the apparatus of independent claim 1. Thus, claims 20 and 21 meet the requirements of Articles 33(2) and 33(3) PCT as well.

3.   Dependent claims 2-19, 22:

As depending on one of the above mentioned independent claims which were found novel and inventive dependent claims 2-19, 22 also meet the requirements of Articles 33(2) and 33(3) PCT.

Claims (amended)

1. A communication system comprising a monitor (31), memory (33, 49), a bus (51) and one or more resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)), said memory (33, 49) being connected to the monitor (31) via said bus (51) and arranged for storing tasks and data, each of said resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)) being connected to the monitor (31) via said bus (51) and arranged for at least one of performing a function and executing a program, wherein said bus (51) is implemented by a plurality of adjacent sections, each section being implemented as an ASIC connected to a resource, said ASIC being arranged to assign sub busses of said bus (51) with variable width.

2. Communication system according to claim 1, wherein said resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)) that are arranged to execute a program are also arranged to generate trigger signals and send them to the monitor (31), said monitor (31) being arranged to receive said trigger signals, to read one or more tasks related to said trigger signals from said memory (33, 49), to check whether resources required for performing said task are available and sending commands to selected resources specifying the task to be performed via said bus (51).

3. Communication system according to claim 1 or 2, wherein said resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)) are arranged for mutual communication via said bus (51).

4. Communication system according to any of the preceding claims, wherein using the bus (51) is based on a datagram principle.

5. Communication system according to any of the preceding claims, wherein said memory (33, 49) comprises a task memory (33) and a data memory (49).

6. Communication system according to any of the preceding claims, wherein said monitor (31) comprises a state machine sequencer (79) for handling several state machines in parallel.

7.   Communication system according to claim 6, wherein said memory comprises a
ROM portion (61) and a RAM portion (59), said ROM portion (61) storing state
machine definitions for said state machine sequencer (79), task definitions and default
5   structures, said RAM portion (59) storing dynamic data.

8.   Communication system according to claim 7, wherein said RAM portion (59)
stores a resource allocation table (63), a data block list (65), and data blocks (67).

10   9.   Communication system according to any of the claims 1-7, wherein said monitor
(31) comprises an executor (77) arranged for:
- sending commands to resources;
- sending task block requests to memory (33, 49);
- receiving status information from resources;
15   - receiving task blocks from memory (33, 49).

10.   Communication system according to claim 8, wherein said monitor (31)
comprises an executor (77) arranged for:
- sending commands to resources;
20   - sending task block requests to memory (33, 49);
- receiving status information from resources;
- receiving task blocks from memory (33, 49);
- maintaining said resource allocation table (63).

25   11.   Communication system according to any of the preceding claims, wherein said
resources comprises at least one of: a transmitter (35(i)), a receiver (37(j)), an analogue
signal manifold (39(k)), a digital analogue converter (41(m)), an analogue digital
converter (43(n)), a control unit (45(o)), and a digital signal processor (47(p)).

30   12.   Communication system according to claim 11, wherein said resources comprise
at least one digital signal processor (47(p)) storing an executable image for performing
a program.

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13.   Communication system according to any of the preceding claims, wherein said communication system is a radio base unit.

14.   Communication system according to any of the preceding claims, wherein each
5   said ASIC comprises a bus control unit (93(r)).

15.   Communication system according to any of the preceding claims, wherein communications transmitted via said bus (51) are multiplexed.

10   16.   Communication system according to any of the preceding claims, wherein each said ASIC comprises a matrix structure with a plurality of cross points (95) arranged to couple input lines with output lines.

17.   Communication system according to claim 16, wherein said cross points (95) are
15   arranged to allow to isolate a group of input and output lines.

18.   Communication system according to claims 16 or 17, wherein said cross points (95) are arranged to allow to shift connections between input and output lines.

20   19.   Communication system according to any of the preceding claims, wherein said bus is arranged on different boards that can be connected to one another.

20.   Method of operating a communication system comprising a monitor (31), memory (33, 49), a bus (51) and one or more resources (35(i), 37(j), 39(k), 41(m),
25   43(n), 45(o), 47(p)), said memory (33, 49) being connected to the monitor (31) via said bus (51) and storing tasks and data, each of said resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)) being connected to the monitor (31) via said bus (51), said bus (51) being implemented by a plurality of adjacent sections, each section being implemented as an ASIC connected to a resource, said method comprising:
30   - assigning sub busses of said bus (51) with variable width;
    - transmitting communications between said monitor (31), said memory (33, 49) and said one or more resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)) via said sub busses (51).

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21.   Computer program product storing instructions and data to be loaded by a
communication system comprising a monitor (31), memory (33, 49), a bus (51) and one
or more resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)), said memory (33, 49)

5   being connected to the monitor (31) via said bus (51) and storing tasks and data, each
of said resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)) being connected to the
monitor (31) via said bus (51), said bus (51) being implemented by a plurality of
adjacent sections, each section being implemented as an ASIC connected to a resource,
said computer program product, after being loaded, allowing said communication

10   system to:
     - assigning sub busses of said bus (51) with variable width;
     - transmit communications between said monitor (31), said memory (33, 49) and said
     one or more resources (35(i), 37(j), 39(k), 41(m), 43(n), 45(o), 47(p)) via said sub
     busses (51).

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22.   A data carrier comprising a computer program product according to claim 21.

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